WHAT IS CLAIMED IS:

1. A method for controlling the length of a carbon nanotube, comprising the following steps:

providing a substrate having at least a reference level on the surface of said substrate on which at least one carbon nanotube is formed, wherein the shortest vertical distance between the top of said carbon nanotube and said reference level is H;

providing at least one positioning platform capable of carrying and moving said substrate;

mounting said substrate onto said positioning platform;

providing a discharging electrode and a piezoelectric actuator which positions said discharging electrode;

providing a position sensor for detection of the height of said discharging electrode relative to said reference level to calibrate the position of said substrate or said discharging electrode in accordance with the height sensed with said position sensor, wherein the vertical distance from said discharging electrode to said reference level is I; and

moving said substrate with said positioning platform and simultaneously applying a voltage pulse to said discharging electrode to cut the carbon nanotube,

wherein H is not less than I.

2. The method of claim 1, wherein said positioning platform is an XY-dimensional positioning platform.

3. The method of claim 1, wherein said positioning platform further

comprises a Z-dimensional positioning platform.

4. The method of claim 2, wherein said substrate is a silicon wafer substrate or glass substrate.

5. The method of claim 1, wherein said discharging electrode is a planar or a wire electrode.

6. The method of claim 1, wherein said discharging planar electrode has an angle in the range of from zero to 15 degrees with respect to said substrate surface.

7. The method of claim 1, wherein said carbon nanotubes are formed on said substrate by chemical vapor deposition (CVD), plasma-enhanced chemical vapor deposition (PECVD) or field-enhanced chemical vapor deposition (FECVD).

8. The method of claim 1, wherein said position sensor is an interferometer, a capacitance-type sensor or a probe-type sensor.

9. The method of claim 1, wherein said voltage pulse applied to said discharging electrode is in the range of from 3.6 volts to 20 volts, and the period of said voltage pulse is in the range of from 30 to 100 microseconds.

10. An apparatus for controlling the length of a carbon nanotube, in cooperation with a substrate having at least one reference level on a surface of the substrate on which at least one carbon nanotube is formed, comprising:

at least one positioning platform for mounting and calibrating the substrate;

a discharging electrode mounted on one side of the positioning

platform to cut the carbon nanotube wherein the position of the discharging electrode can be calibrated with the positioning platform;

a piezoelectric actuator for calibrating the position of the discharging electrode or height of the discharging electrode relative to the substrate reference level;

a position sensor for detection of the height of the substrate; and

a voltage pulse supplying means for applying a voltage pulse to the discharging electrode to cut the carbon nanotube.

11. The apparatus of claim 10, wherein said positioning platform is constituted by an XY-dimensional positioning platform and a Z-dimensional positioning platform.

12. The apparatus of claim 10, wherein said substrate is a silicon wafer substrate or glass substrate.

13. The apparatus of claim 10, wherein said discharging electrode is a planar or a wire electrode.

14. The apparatus of claim 10, wherein said discharging planar electrode has an angle in the range of from zero to 15 degrees with respect to said substrate surface.

15. The apparatus of claim 10, wherein said carbon nanotubes are formed on said substrate by chemical vapor deposition (CVD), plasma-enhanced chemical vapor deposition (PECVD) or field-enhanced chemical vapor deposition (FECVD).

16. The apparatus of claim 10, wherein said position sensor is an interferometer, a capacitance-type sensor or a probe-type sensor.

17. The apparatus of claim 10, wherein said voltage pulse applied to said discharging electrode is in the range of from 3.6 volts to 20 volts, and the period of said voltage pulse is in the range of from 30 to 100 microseconds.

18. The apparatus of claim 10, wherein the vertical distance between said discharging electrode and said reference level is not less than the shortest vertical distance between the top of said carbon nanotube and said reference level.